EVALUATION OF INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI) PERFORMANCE IN URBAN HEALTH CENTERS

Lusaka, Zambia

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ACRONYMS

BASICS	Basic Support for Institutionalizing Child Survival
CBoH	Central Board of Health
DHMT	District Health Management Team
HMIS	Health Management Information System
HW	Health Worker
IMCI	Integrated Management of Childhood Illness
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
QA	Quality Assurance
STD	Sexually Transmitted Disease
TB	Tuberculosis

EVALUATION PROCEDURE

This consultancy was carried out from 10-23 August 1997 in Lusaka, Zambia. Principal work included in this consultancy included:

1. Follow up on health facility surveys previously carried out;
2. Follow up on supervision workshop carried out in February 1997;
3. Determine next steps for supervision initiatives; and
4. Assist in data collection for health facility organization survey.

Health Facility Survey

In preparation for the introduction of the integrated management of childhood illness (IMCI), a health facility survey instrument was compiled to measure its impact on the work of eight urban health centers in Lusaka urban district. These health centers had been reconstructed a short time before IMCI was to be introduced, and the staff had recently received refresher training in basic clinic skills, though they had not been introduced to IMCI itself.

The purpose of the survey was to detect changes in health care delivered following IMCI training. The intent of the survey was to determine if IMCI training would have an effect not only on the work of the individual health worker, but on the health facility as a whole.

There are four parts to the survey. The first is an observation of the health worker as he or she treats children under age five who present with the conditions included in the IMCI guidelines. The questions which the health worker asks, the activities he or she undertakes, and the advice given to the mother are recorded. There is no attempt to validate the findings of the health worker, only to determine if the correct activities have been carried out. The second part of the survey asks the health worker a series of questions about serious childhood illness to assess knowledge and management skills. The third part is an exit interview with mothers of children who have been seen by health workers for common childhood illnesses. In the fourth part of the survey, various assessments of clinic resources and management were conducted. The actual survey was conducted by eight health workers who had been specially trained for the survey, and who visited the health facilities in teams of two.

Assessment of the facilities was carried out on three occasions. The first survey was done just prior to IMCI training to serve as a baseline. The second was carried out three months following IMCI training, and the third, some nine months later. By the third survey it was not always possible to follow the same health worker who had originally been assessed and subsequently trained in IMCI, because of transfers, maternity leaves, etc. At the nine-month survey, 56.5 percent of the 223 children were seen by IMCI-trained health workers. The performance of the non-IMCI trained health workers (who saw the other 43.5 percent of the children) from the same facilities provides some evidence for the influence of IMCI training on a wider cohort of workers.

Data were recorded on forms and entered using EPIINFO. As of August 1997 most of the analysis has been completed for the health worker observation and exit interviews. The following pages contain a summary of "key indicators" for health worker performance (Tables 1 and 2), and a summary of all indicators for health worker performance and exit interviews with mothers (Tables 3 and 4). Further statistical analysis of health worker performance and exit interview data is still on-going. Most of the data from the health worker interviews and the facility survey has now been entered, and results can be anticipated soon.

The data presented here give a good overview of the performance of health workers in eight health centers where staff have received IMCI training, and how the performance changes over time. Overall, the impression is that there has been a substantial improvement in health worker performance, particularly in the clinical skills. In almost all categories assessed there has been a substantial improvement over the baseline data. In some cases the results, although showing great changes following IMCI training, are still not at an acceptable level. Items such as querying for some of the danger signs, checking skin turgor, counting respiration and checking for pallor, still require improvement. This is also important in the history taking, where questions about other conditions are often not asked, and questions such as blood in the stool, are sometimes forgotten in children with diarrhea. Although the technical or clinical skills have generally been done well, there is concern over the counseling component of IMCI. Many health workers did not tell mothers about the disease of their child, and did not always explain to mothers how to give their child his or her medication. The same was true of instructions to the mother on when to return to the health center with her child. Although these indicators were considerably improved over the baseline results, the improvements were in general less extensive than in the technical areas.

Examining data from the exit interviews with mothers shows that many messages the health workers were giving to mothers were not being understood. For example, during the consultation IMCI-trained health workers reported telling the mother her child's diagnosis 62.7 percent of the time, yet the mother could only recall having been told the diagnosis during 25.8 percent of the consultations. On the other hand, mothers were generally well informed as to when to bring the child back for further treatment, even when it had not been adequately explained to them. Even when the mother acknowledged she had been told how to take medications, she had difficulty in at least half of the instances in repeating these instructions correctly.

At the same time, some of the indicators at the nine-month survey suggest an early fall-off from the observations at three months. This points to the need to sustain the skills acquired through IMCI training through a regular supervision and support process to ensure skills do not erode over time.

The performance of non-IMCI trained workers from these facilities also shows some areas of improvement over baseline facility performance levels, though in many areas this difference is not clear. This suggests that IMCI-trained health workers may have some influence on the performance of other health workers in the same facility.

Supervision Workshops

Because of a concern about the collapse of supervision in many of the districts visited and a need for supervision to support the IMCI training provided, it was decided to address restoration and improvement of the supervision process on a more integrated basis than had been carried out in the past. This initiative by BASICS received widespread support from many organizations and from the Central Board of Health. During my previous visit in February 1997, an integrated supervision checklist was complied with assistance from various national programs. This was seen as a core set of questions which could assess overall function of health services from a facility. These could point out problem areas where further probing would be required to define the actual nature of the problem and its remedy. Other questions could be added to the checklist to reflect the support needs of a particular district more accurately. At the same time, there was an equal desire to stress the process of support supervision with a particular emphasis on the problem solving process. In this way, supervision could access the skills of the Quality Assurance facilitators and coaches who are present in most districts.

A workshop for DHMT supervisors from three Lusaka urban districts was held in February at the Kafue Road Garden House Hotel to review the basic principles of supervision. In the course of this workshop, participants went through the checklist in considerable detail to determine what questions would or would not be useful in district-level work. After considerable rework, the somewhat shortened questionnaire was then used in supervision of several Lusaka health centers. Participating in the workshop were four Quality Assurance Linkage facilitators who worked with other participants to provide feedback to the health centers which had been "supervised" and to assist clinic staff in solving the problems which had been identified.

In this present consultancy (August 1997), district directors of health, or their deputies, and members of the DHMT in the three districts were visited to assess how the process had gone in the intervening six months.

Lusaka Urban District

Discussions with Dr. Rosemary Kumwenda-Phiri from Lusaka Urban district were carried out. Following the February workshop, the Lusaka DHMT drew up a supervisory timetable and divided itself into two teams. These teams of six or more persons would visit a health center, and divide themselves according to areas of responsibility. They would start off with a meeting with the in-charge to discuss the purpose of the supervision and the problems which a particular health center was facing. The team would then divide up and proceed with the supervision process. Included in the supervision would be the observation of health workers providing care to sick children. There would also be observation of the of the function of MCH clinics for well children and antenatal services. Since a number of health workers have been trained in IMCI, the use of the checklist to follow up IMCI-related items has been appreciated. Immediate feedback was provided to the clinic staff, and the problem solving approach was used. A subsequent report was provided to health center, and the problem areas noted in the report were carried over to the next

supervision visit for follow up. Lusaka Urban District has managed to stick to their supervision timetable quite well, and has had no difficulties with transport to date.

Since a large team carries out supervision and divides up parts of the checklist, they have been supplied a copy of the checklist on computer disk so that it can be reformatted to match the DHMT's approach.

Chongwe District

Following the February workshop, the Chongwe DHMT held a one-day workshop for their own health center staff to explain the new approach to supervision to be undertaken, and how it would be carried out. The questions on the checklist were discussed with the health centers.

Originally the DHMT had planned on a monthly supervision visit to each health center, but has been unable to visit distant sites more than on a quarterly basis. Two teams of DHMT members were established and a supervision rota created. Members of the team are the same people who used to be carrying out supervision separately for their own particular areas of responsibility. The DHMT feels that using a team enables more technical skills and experience to be brought to the supervision process. Supervision visits now stress the problem solving approach. When areas of weakness are identified through discussion and use of the checklist, they are discussed as a group with the health workers and the DHMT members. Using the checklist has been a great help to the DHMT, especially in technical areas of the IMCI, where not all members have received training. The observation of the health worker providing services to a sick child has been a new approach in supervision, which the Chongwe team has appreciated. The checklist has stimulated the supervision team to include new areas, such as the neighborhood committees and water and sanitation services at the health centers, which previously were never included in supervision. The DHMT has noted a new openness and willingness to discuss problems. Problems identified by health centers then become part of the action plans and receive continued attention until solutions are found.

Kafue District

Following the February workshop, the DHMT drew up a supervision timetable using teams of three persons to provide support to health centers. To supervise the 13 health centers in the district, seven routes have been established, and health centers in these areas are supervised quarterly. For the most distant sites, travel time and limited access to the sole district vehicle has made it difficult to adhere to the schedule.

In Kafue District, supervision is carried out by a team of three persons who meet with the in-charge, then split up to assess the health center. At the end of the visit the team meets with all the health center staff, discussing the strong and weak points observed. In carrying out problem solving, the team has found that 75 percent of the potential solutions come from the health center staff and 25 percent from the supervisors. The feedback part of the session has been particularly

helpful. The district supervisors feel that the problem-solving and support approach has been responsible for changing the supervision atmosphere from finger-pointing to cooperation. They report that health center in-charges no longer "run away" when they learn the supervisors are coming, but now willingly ask the district for help in solving their problems.

The Kafue team still has difficulty with the "observing the health worker" part, and probably could use some help in making health workers at ease while carrying it out. They have identified the need for on-the-spot training for problems which are identified during the visit, but admit they are tired out at the end of the visit, without energy for involved training. They identify the need for more of their supervisors to be trained in problem solving through the QA project.

Future Directions for the Supervision Initiative

Plans have been made to supply checklists to all districts with a cover letter indicating that this process may be adapted to fit their particular needs. Discussions have also been conducted with the monitoring and evaluation section of the CBoH on incorporating the supervision process into the information system. Discussions concerning collection and use of information through the supervision process were carried out with Charles Mundale at the Central Board of Health. Two days were spent in the Solwezi district discussing the problems of supervision with Mimi Church, Ms. Lungu of the Solwezi DHMT and Mr. Mwanza of the Ndola provincial health team. They have been supervising the implementation of the new HMIS and are regular supervisors of facility and district health services.

Discussions centered around two recurrent themes in the HMIS development: use of data collected for decisions at the level collected, and the role of the information system in raising "flags" about problem areas rather than collecting adequate information to clearly define every problem noted. In this respect it was felt that the supervision "package" of problem-identification, problem-solving process linked to a checklist for commonly provided services would complement the information-for-district-decision-making approach of the HMIS. Health facilities are encouraged to draw up action plans. In the new HMIS, it is proposed that some indicators be developed to assess quantitativley progress toward achieving objectives specified in the work plan. In this context, the supervision process could play a role in monitoring this progress.

One of the major reasons for supervision is maintaining communication between health providers at the facility level and district management teams. The HMIS includes self assessment activities for both the facility and the DHMT to be done on a quarterly basis. The supervision process could serve as a communication link for problems identified by the facilities in their self assessment process to be "gazetted" by the DHMT in their self assessment exercises. This would firmly anchor the supervision process in both facility and DHMT information utilization functions. Mr. Mwanza from Ndola District was particularly taken by the possibility that the regional teams, in their supervision of DHMTs, could then assess problems across the health facilities by reviewing district self assessment exercises with the DHMT, rather than having to

assess several health facilities (always a biased sample of easy to reach facilities). In this respect, a well established district-level supervision process can address the problem of the second tier of supervision (region-to-district) which has previously not been seriously considered, but is an important part of managing a health system such as Zambia's.

The new HMIS places a considerable emphasis on areas such as drug stores and management and on "minimal physical standards." In this respect it duplicates some of the concerns in the supervision checklist developed in February of this year. This is not a major obstacle since the checklist part of the supervision process is intended to be easily modified as needs change. However, I am concerned that too much of the district system's finite energy goes into "bean counting," especially in areas which change little from visit to visit, or over which the facility has little control.

This points to an important area of ensuring that the supervision process remained clearly directed toward improving the quality of clinical care, not just focused on the much-easier-to-measure "structural" components. This means that the process of supervision should be monitored to ensure that it has a clear orientation toward maintaining clinical standards.

Copies of the supervision materials on disk were left with Ms Joyce Tembo in the monitoring and evaluation section of the Central Board of Health. These are to be made available for use in health centers within the HIS phase one districts for their use over the next six months. Use there will be monitored closely to see how the supervision process and the HIS can complement each other, and to eliminate duplication.

Health Facility Organizational Survey

Long waiting times and congestion of facilities is a pattern in Lusaka urban clinics. A large percentage of mothers interviewed in the course of the health facility surveys reported dissatisfaction with the waiting time and the congestion in urban health centers. In discussions with some health workers it appears that this congestion contributes to absenteeism or late arrivals among health staff. In spite of this congestion in the morning hours, a number of the clinics were only lightly used in the afternoons. Discussions with in-charges revealed that they were unaware of utilization patterns by day or by time of day.

With this information Dr. Bob Pond undertook an evaluation with data collection assistance provided at Kabwe estate and Kamwala clinics. In these interviews with the in-charges, it was evident that there is considerable potential for improving patient flow and scheduling of both clinic staff and various clinical activities.

These preliminary findings were discussed with Ms. Joyce Tembo. If these findings are supported by the analysis of the complete data, then the Quality Assurance unit would be happy to collaborate with BASICS in staging a one-day workshop for in-charges to look at possible

ways of improving clinic organization through more flexible hours, assignment of staff and scheduling of special clinics such as TB, STDs, etc.

NEXT STEPS

Based on the success of the supervision efforts in the three Lusaka Urban districts, and the good response from both the supervisors and the health facility staff, this initiative should be carried forward. Possible approaches include developing a "canned" supervision course, distributing the supervision outline developed (including the checklist) to all districts, and to do a supervisors' "brainstorming" session to see how supervision can be improved. Since there is baseline data on health facilities in Kabwe District before introduction of IMCI, a comparison of health worker performance in the two areas—one where IMCI-oriented supervision is taking place, and the other where the supervision system has not been addressed—could be done. In the development of further supervision activities, the QA unit should be involved. The utility of the QA facilitators in strengthening the supervision training and associated problem solving has been demonstrated.

APPENDIX

Summary of findings from baseline, 3-month, and 9-month facility surveys carried out in conjunction with IMCI in Lusaka Urban Health Centers

In preparation for the introduction of the Integrated Management of Childhood Illness (IMCI), a health facility survey instrument was compiled to measure its impact on the work of eight urban health centers in Lusaka urban district. These health centers had been reconstructed a short time before IMCI was to be introduced, and the staff had recently received refresher training in basic clinic skills, though they had not been introduced to IMCI itself.

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The data presented here give a good over view of the performance of health workers in eight health centers where staff have received IMCI training, and how the performance changes over time. Overall, the impression is that there has been a substantial improvement in health worker performance, particularly in the clinical skills. The performance of non-IMCI trained workers from these facilities also shows some areas of improvement over baseline facility performance. The counseling and communication skills of health workers appears to lag behind the technical skills. At

the same time, some of the indicators at the nine-month survey suggest an early fall-off from the observations at three months. This points to the need to sustain the skills acquired through IMCI training through a regular supervision and support process to ensure skills do not erode over time.

Compiled by Gilbert Burnham, Abdikamal Alisalad, and George Pariyo

TABLES

Table 1

Observation of the Health Worker

Key Indicators

		Baseline before IMCI training	3 months after IMCI training	9 months after IMCI training		
				untrained	*mean*	trained
		in % unless stated otherwise				
INDICATOR N°						
1	Age by questioning	51	75.8	79.2	*75.3*	72.9
	Weight-for-age	35.2	57.3	33.7	*46.6*	56.3
2	Immunization checked	47.7	62.4	49	*54.1*	57.9
	Health worker asks mother about—					
3	convulsions	1	37.5	2.1	*21.5*	36.5
4	vomiting everything	34.5	43.2	31.3	*63.2*	86.4
5	unable to breastfeed			29.3	*58.7*	88
6	cough/diff breath	69.4	88	75.5	*86.2*	94.4
7	diarrhea	32.7	43	27.1	*41.4*	52.4
8	fever last 24hr	91.3	87.1	59.8	*82.7*	99.2
9	how well eating	29.6	58	20.4	*48.9*	69.8
	Children with cough/difficulty breathing: health worker—					
10	counts respirations	28	65.3	2.1	*46.2*	74.6
11	looks for chest indrawing	44.1	82.1	56.7	*78.6*	84.9
12	**antibiotics given or recommended**					
	oral	45.8	29.5	35.1	*39.1*	42.1
	inj	11.3	6.3	4.1	*8.2*	9.5
	For children with diarrhea: Health worker—					
13	asks duration	84.3	88.2	78.3	*83.6*	89.7
14	asks blood in stool	60	63.2	26.1	*67.7*	82.8
15	checks skin pinch	30	51.5	17.5	*39.8*	41.1
16	gives or recommends ORS or ORT	60	94.1	83.3	*79.1*	77.4
17	Health worker checks palms/conj for pallor	52.6	33.6	33.3	*43.2*	50.8
18	**Health worker explains medicine dispensed—**					
	dose	22.5	67.4	45.7	*41.4*	38.1
	time	27.7	67	46.9	*41.9*	38.1
	duration	22	63.9	39.6	*38.3*	37.3
	all three	18.9	63.1	42.7	*36.8*	57.3
19	For children given or prescribed ORS, the health worker explains its preparation	27.3	46.8	31.3	*45.7*	57.9

20	For children given medication, the health worker asks mother if she understood dose/frequency/days	**9.8**	**43.9**	**21.3**	***28.8***	**65.3**
21	Average duration of sick child consultation in minutes					
	mean	**6.015**	**5.948**	**4.68**	***4.843***	**4.97**
	standard deviation	**6.637**	**3.092**	**4.4**	***3.328***	**2.15**
	standard d error	**0.474**	**0.204**	**0.42**	***0.223***	**0.19**
	median	**5**	**5**	**4**	***4***	**5**
22	Sick child consultations lasting less than 5 min	**46.4**	**30.2**	**61.9**	***52***	**44.4**

Table 2

Exit Interviews with Mothers

Key Indicators

		Baseline—before IMCI training	3 months after IMCI training	9 months after IMCI training		
				untrained	*mean*	trained
28	Mothers volunteering they'll come back if—					
	fever persists	30.9	60.6	32.3	41.8	61.7
	child abnormally sleepy	5.8	19.2	26.3	33.5	42.7
	child can't eat/drink	9.4	10.5	7.1	16.5	27.1
	child drinking poorly	6.8	5	2	2.1	2.1
	blood in stool	0.5	0.8	0	0.5	0
	fast or difficult breathing	15.7	47.1	22.2	24.2	28.2
30	Mothers reporting someone at clinic asked to see immunization card	64.2	83.7	82	84	90.4
31	Children with immun card due for immunization this visit and got all indicated	43.3	6.9	8.5	5.5	1.4

Mothers' correct explanation of drugs received from health facility

Mothers' ability to describe how treatment variously prescribed for their children, ORS, Chloroquine and Cotrimoxazole is noted in these tables. The figures for the 9-month follow up are broken down in further detail in part (b) where a comparison is made between explanations by mothers whose children had been attended by health workers trained in IMCI and those who were not.

Part (a) indicator 29

Mothers who can correctly explain the following for drugs their children received—	*Baseline*			*3 Month follow up*			*9 Month follow-up*		
	ORS	*CQ*	*CO*	*ORS*	*CQ*	*CO*	*ORS*	*CQ*	*CO*
									(mean)
how much per dose	84.2	76.5	27	97	100	100	21.3	50.3	24
how many times/day each dose				97	98	97			
how many days to give meds				68	80	88			

Part (b). The correct explanation of drug dosage, frequency and length of treatment for the 9-month follow up. Data for mothers whose children had been attended by health workers trained in IMCI is give in bold italics below the figures for mothers whose children had been attended by workers untrained in IMCI.

Variable	ORS	Chloroquine	Cotrimoxazole
correct dose	13.3 ***30.1***	47.3 ***54.3***	24.8 ***25.0***
number of days	9.8 ***24.7***	42.4 ***55.9***	23.9 ***21.7***
length of treatment	9.8 ***20.4***	42.4 ***55.9***	22.8 ***19.6***

Details of data collected (Tables 3 & 4)

Table 3

Observation of the Health Worker

	Baseline—before IMCI training	3 months after IMCI training	9 months after IMCI training		
			untrained	*mean*	trained
	in % unless stated otherwise				
Percent of children seen by—					
Clinical Officers	73.5	86.5		95	
Registered Nurses	15.8	13		2.3	
Enrolled Nurses	5.6				
Doctors				1.8	
Environmental Health Techs					
Classified Daily Workers					
Community Health Workers				0.5	
Others					
Age determined by questioning	51	75.4	79.2	75.3	72.4
Weight-for-age measured	35.2	57.3	33.7	46.6	56.3
Body Temperature taken	81.1	91.8	97.9	96	94.4
Immunization checked by card	47.7	57.6	49	54.1	57.9
Health Worker asked why mother came & mother mentions—	92.9	99.1	96.9	98.7	100
cough/diff breath	69.4	88	76.3	81.6	85.7
diarrhea	32.7	43	27.8	26.9	26.2
fever	68.4	73.8	41.2	48	53.2
ear problem	5	5.7	1	5.1	8.3
other complaint	50	50	87.6	55.7	46.1
Health Worker asked about—					
length of illness	98.5	98.7	100	99.5	99.2
previous treatment for same	32.1	30.6	28.9	30.5	31.7
treatment at home or clinic	27	34.1	26.6	31.7	35.5
fever last 24hr	91.3	87.1	59.8	82.1	99.2
history of convulsions/fits	1	37.5	2.1	21.5	36.5
change in consciousness	45.7	67.3	47.9	67.6	82.5
diarrhea	35.7	29.3	27.1	41.4	52.4
mother says diarrhea present			60	50	47
duration of diarrhea	81.9	86.3	78.3	84.6	89.7
blood in stool	58.3	61.6	26.1	57.7	82.8
freq/consistency	65.3	66.2	65.2	73.1	79.3
cough/difficulty breathing	74.4	82.3	75.5	86.2	94.4
had cough/diff breath			92.8	90.3	88.9
vomiting	27.7	20.5	25.8	34.7	41.3
had vomiting			54.5	41.9	36.5
spitting up everything	34.5	43.2	31.3	63.2	86.4
breast feeding (if <2yrs)	43.9	60.4	29.3	58.7	88

how well child is eating	29.6	58	20.4	48.9	69.8
Health Worker's examination of child—					
pinches skin to check turgor	12.3	28	17.5	30.8	41.1
counts resp rate	3.1	60.3	2.1	43	74.6
looks for chest indrawing	36.7	76.7	56.7	72.6	84.9
listens to chest with stethoscope	50.5	12.9	23.7	26.5	28.6
checks palms or conj for pallor	52.6	33.6	33.3	43.2	50.8
Health Worker prescribes/recommends the following treatment—					
immunization	0.5	3.4	1	0.9	0.8
chloroquine tabs or syrup	34.9	54.3	48.5	53.4	57.1
chloroquine injection	1	3	2.1	1.8	1.6
an antibiotic tabs or syrup	41.1	28.9	35.1	39	42.1
an antibiotic injection	9.9	6	4.1	7.2	9.5
paracetamol	52.6	28.9	67	53.4	42.9
ASA	11.5	2.2	0	0	0
vitamin A	1.6	11.6	1	4.5	7.1
ORS or home available fluids	22.9	31.5	22.7	24.2	25.4
antimotility or antidiarrheal drug	1	0	1	1.8	2.4
other treatment	50	49.6	52.6	50.2	48.4
no drugs or treatment	2	0.9	0	0	0
referral to hospital	5.1	3.9	3.1	3.2	3.2
Total No. of drugs admin/prescribed—					
0	3.1	1.7	4.2	4.5	4.8
1	8.3	24	10.4	13.5	15.9
2	47.4	40.6	38.5	39.6	40.5
3	26.6	28.4	33.3	32.9	32.5
4	13	3.5	12.5	8.1	4.8
5+	1.6	1.7	1	1.4	1.6
mean	2.427	2.131	2.47	2.306	2.21
standard deviation	0.979	0.937	1.03	1	0.985
standard error	0.071	0.062	0.103	0.067	0.88
median	2	2	2	2	2
mode	2	2	2	2	2
Total No. of injections administered—					
0	86.2	90.7	88.7	87.4	86.5
1	13.2	5.9	6.2	8.1	9.5
2	0.5	1	1	0.9	1.6
3	0	1	1	0.4	0.8
4	0	0	—	0.4	0.8
5+	0	1.5	4.1	2.6	0.8
mean	0.143	0.181	0.29	0.278	0.26
standard deviation	0.366	0.724	1.05	1.002	0.965
standard error	0.027	0.051	0.107	0.067	0.086
median	0	0	0	0	0
mode	0	0	0	0	0

For tabs/syrups disp/prescribed the Health Worker explained—					
dose of medication	22.5	67.4	45.7	41.4	38.1
time of day to give	27.7	67	46.9	41.9	38.1
duration of Treatment	22	63.9	39.6	38.3	37.3
all three	18.9	63.1	?	36.8	37.3
potential adverse reactions	1.6	13.5	1	1.4	1.6
not to take other med with these	0.5	1.3	0	0	0
what to do with remainder of medicines	0	0.5	0	0.5	0.8
If ORS given/prescribed Health Worker—					
explains how to prepare ORS	30.4	50	31.3	45.7	57.9
demonstrates how to prep ORS	26.1	31.1	0	30.6	57.9
asks mother to demon ORS prep	15.2	28	17.6	50	78.9
Health Worker explains to mother/guardian—					
what is wrong with child	37.2	74.6	28.9	48	62.7
to give more fluids than usual	13.8	40	7.3	38	61.6
to continue breastfeeding or encourage child to eat	15.3	45.4	4.2	33.5	56
what treatment to do at home	29.1	56.5	16.8	41.6	60.3
Health Worker tells to return for further evaluation if—	20.9		45.3	60.9	72.8
fever persists after certain period	19.5	18.3	15.2	16.5	17.2
child is unable to drink	0	5.7	6.5	2.2	0
blood appears in stool	0	4.4	0	0.7	1.1
diarrhea persists	4.9	3.1	0	3.6	5.4
child develops fast/diff breath	2.4	22.2	8.7	7.2	6.5
child becomes worse for any reason	43.9	49.1	17.8	24.8	28.3
at end of treatment for checkup	14.6	7.4	44.4	29.9	22.8
other	34.1	47.6	32.7	47.6	55.1
Health Worker asks open questions to ensure mother's understanding of—					
how to give med (dose, freq, duration)	9.8	43.9	21.3	28.8	65.3
when to return with the child	10.9	53.2	37.5	55.7	69.9
Average duration of sick child consult in minutes					
mean	6.015	5.948	4.68	4.843	4.97
standard deviation	6.637	3.092	4.4	3.328	2.15
standard error	0.474	0.204	0.42	0.223	0.19
median	5	5	4	4	5
mode	5	5	2	5	5

Table 4

Exit Interview with mother

	Baseline—before IMCI training	3 months after IMCI training	9 months after IMCI training		
			untrained	*mean*	trained
	in % unless stated otherwise				
For what condition did the mother bring the child to health centre?					
cough/difficult breath	71.7	88.3	85.3	*84*	84.9
diarrhea	13.7	44.1	22.5	*26.8*	30.9
fever	70.6	78.6	75.5	*78.3*	81.4
ear problem		11.2	1	*2*	3.1
skin problem		14.4	2.9	*4*	5.2
other complaint		80.5	37.3	*47*	57.7
It this the child's first visit to Health centre for this illness?	87.6	89.3	87.3	*85.4*	83.5
Days since child first developed signs of illness—					
mean	3.715	4.734	4.3	*4.03*	3.64
standard deviation	2.272	6.947	7.39	*5.84*	3.5
standard error	0.164	0.466	0.74	*0.416*	0.36
median	3	3	3	*3*	3
mode	3	3	3	*3*	3
Received treatment at home for this before coming to clinic	55.4	50		*57*	
Home Treatment given for—					
cough/respiratory difficulty	26.9	31.2		*79.2*	
diarrhea	22.2	13.8		*50*	
fever	50.9	69.7		*82.8*	
other	0	8.3			
Treatment given at home for diarrhea					
ORS	72.7	100		*43.8*	
home available fluids (tea, milk, soda, etc)	9.2	0		*6.7*	
extra water	0	0		*0*	
extra breast feeding	0	11.1		*0*	
antibiotics	4.5	0		*13.3*	
ASA	0	0		*13.3*	
traditional medicines/herbs/tattoos	13.6	0		*0*	
medicines from private clinic	0	0		*0*	
other	9.1	0		*13.3*	
Treatment given at home for cough				*79.2*	
cough syrup	74.2	75.8		*43.2*	
traditional medicines	6.5	4.3		*28.9*	

antibiotic home treatment	9.7	8.7		*2.2*	
ASA	-	36.7		*22.2*	
medicines from private clinic	2.9	4.2		*6.5*	
more water	3.2	0		*0*	
other medications	3.2	23.1		*4.4*	
Treatment given at home for fever		69.1		*82.2*	
chloroquine syrup or tabs	15.5	40.7		*19.6*	
fansidar	3.4	0		*0*	
antibiotics	0	6.5		*6.5*	
Panadol/ASA/other analgesic or antipyretic	77.6	82.9		*61.3*	
traditional medicines/herbs/tattoos	0	2.2		*1.1*	
tepid bath/cooling sponging	1.7			*0*	
medicines from private clinic	3.4	0		*0*	
other	1.7	0		*13.8*	
Health Worker Counsel to mothers					
HW told what was wrong with child	30.7	52.9	25.5	*25.3*	25.8
fever/malaria	54.2	69.2	55.6	*63.3*	73.9
diarrhea	6.8	25.6	14.8	*10.2*	4.5
dysentery	1.7	1.4	3.7	*2*	0
cold/upper respiratory infection	23.7	58.9	22.2	*24.5*	27.3
pneumonia	1.7	12.3	3.7	*4*	4.3
measles	3.4	4.1	3.7	*2*	0
malnutrition	6.8	5.5	0	*0*	0
there was nothing wrong	0	0	2	*2*	0
didn't understand what was told	0	2.7	0	*0*	0
other	20.3	24.7	11	*12*	13
Given any follow up date	15.2	69.2	29	*35.9*	43.8
Told when to come back with child immediately	17.8	68.3	29.3	*29.2*	29.2
How to know if child gets worse and should be brought back?					
fever doesn't go away	30.9	60.6	32.3	*41.2*	52.1
child gets drowsy/difficult to arouse	5.8	19.2	26.3	*33.5*	42.7
child unable to eat	9.4	10.5	7.1	*16.5*	27.1
child unable to drink	6.8	5	2	*2.1*	2.1
blood in stool	0.5	0.8	0	*0.5*	1
diarrhea persists	12	28.2	7.1	*7.7*	8.3
child has fast/difficult breathing	15.7	47.1	21.2	*24.2*	27.1
child fails to get better	46.6	72.1	42.4	*40.7*	41.7
other	8.4	12.5	12.1	*12.4*	12.5
can't explain/remember	10.5	2.5	8.1	*5.7*	4.2

Any Treatment given to child today	92.1	95.9	94.1	*93.4*	95.8
Explanation was given how to give medications at home	42.4	97.7	97.9	*98.9*	100
Repeats explanation correctly for					
chloroquine tabs/syrup	76.5	71.6	57.2	*50.3*	45.2
cotrimoxazole tabs/syrup	27.3	39.2	24.2	*24*	25
paracetamol tabs/syrup	66.7	46.3	62.6	*54.6*	51
ORS	84.2	43.3	13.2	*21.3*	30.1
amoxicillin tabs/syrup	50	0.9	5.5	*8.7*	12
erythromycin suspension	0	0.9	1.1	*1.1*	1.1
Pen V/orapen	0	2.6	7.7	*4.4*	1.1
nalidixic acid	33.3	0.9	1.1	*1.1*	1.1
vitamin A	25	18.6	4.4	*6.6*	8.7
FeSO4	0	1.8	4.4	*3.8*	3.3
Folic acid	50	0.9	1.1	*1.1*	1
other	83.9	54.5	16.5	*26.8*	39.1
HW explained possible adverse reactions of drugs given	0.6	2.3	0	*0*	0
HW explained what to do with remaining drugs	2.3	0.9	0	*0*	0
Mothers asked to prepare ORS					
correct volume	29.3	63.1	37.6	*43.7*	53.6
incorrect volume (much less)	60	27.8	43.8	*48.6*	40
incorrect volume (much more)	13	2.4	9.4	*6.3*	4.4
doesn't know correct volume	2.1	6.7	39.1	*25.2*	8.9
1 sachet to be suggested	72	89.3	69.3	*69.9*	70.5
incorrect number of sachets suggested	28	2.2	18.2	*14.5*	13.8
doesn't know correct number of sachets	0	8.5	56.3	*51.7*	50
mother knows how to prepare SSS	12.5	18.6	18.8	*19.2*	19.6
HW told mother how to do home nursing care for child	8.6	9.1	15.2	*15*	14.1
give more fluids	25	62.5	37.5	*38.9*	40
continue or increase feedings or breast feeding	25	33.3	5.9	*16.7*	40
give medicine	25	85.7	12.5	*5.7*	0
tepid baths for fever	18	0	6.3	*10*	14.3
keep the child warm	25	30	18.8	*11.4*	7.1
can't remember	0	0	0	*0*	0
other	18.8	30	12.5	*8.6*	6.7
Mother brought child's immunization card today	92.7	90.5	96	*90.4*	88.7

HW asked for immunization card today	64.2	83.7	82	*84*	90.4
Received immunization today	43.3	6.9	2.9	*13*	24.2
Does not require immunization	7.9	6	67	*13.1*	73.9
Would mother bring sick child for immunization if needed?	54.5	75.1	81.2	*84.8*	91.7
Did the mother ever come for child's immunization and failed to receive?	7.9	9		*9.1*	
immunization session was cancelled	0	7.1		*0*	
was late	20	14.3		*0*	
supplies had run out when arrived	0	20		*0*	
couldn't wait/got tired waiting and left	6.7	15.4		*0*	
child was too ill to receive immunization/return	66.7	68.8		*0*	
other	6.7	26.7		*0*	
How long did the mother wait until received by HW at this visit(hours)					
mean	1.254	2.67	4.15	*3.868*	3.66
standard deviation	1.331	1.69	2.18	*1.902*	1.32
standard error	0.096		0.22	*0.141*	0.14
median	1		4	*4*	3
mode	1		4	*4*	3
Waiting time was too long	35.6	72.5	88	*85.9*	86.8
Dissatisfied of the services today? (More than one response possible)	38.2	63.1	70.2	*74.7*	81.7
long waiting	41.1	88.7	93.1	*92.3*	91.3
no medicine	49.3	1.9	5.5	*5.2*	5.1
congested	2.7	32.7	28	*30.7*	36.7
no doctor	2.7	9.6	1.4	*1.3*	1.3
other	4.1	7.7	5.5	*5.3*	5.1